REMARKS

Acknowledgement of Allowed Claims

Applicant hereby acknowledges that claims 15-24 have been allowed.

Rejection of Claims 6 and 8 Under 35 USC 101 and 35 USC 112 second paragraph

The Examiner has rejected claims 6 and 8 under 35 USC 101 and 112, second paragraph. In reply, Applicant has amended claims 6 and 8 to overcome the rejection.

Rejection of Claims 1-5, 7, 9-14 Under 35 USC 103

The Examiner has rejected claims 1-5, 7, 9-14 under 35 USC 103(a) as being unpatentable over Liou (US Pat. 6,292,299 B1) ("Liou").

In reply, Applicant submits that in order to show prima facie obviousness, it is required "that (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art references teach or suggest all the claim limitations" (MPEP 2143).

With regard to claim 1, the Liou reference specifically fails to teach "a first portion with one or more gratings" and "a second portion without gratings."

The Examiner has stated that "Liou does not explicitly teach gratings being recorded in a holographic material such as Lithium Niobate" but that "holographic Bragg gratings are well known in the art for their utility in tunable filters." In reply, Applicant emphasizes the following:

(1) The filter of the claimed invention contains holographic volume grating, which achieves hitless architecture without the need for a broadband reflector as in the case of Liou. As such, the filter can be made of one material, eliminating the manufacturing cost of a reflector.

(2) In Liou, the motion from the hitless area to the filter area involves crossing a boundary made of two different materials. As such, a phase distortion occurs at the crossing, which induces transients in all reflected signals. In the claimed invention, the hitless (without gratings) and filter (with gratings) portions are of the same material and therefore no phase distortion exists on any signals (filtered and non-filtered). The distortion present in the Liou invention is unacceptable for precise tuning applications.

While holographic gratings have been used in the art, there has been no teaching of using gratings as part of a filter material whereby a hitless tunable filter can be achieved. Though Liou mentions that a variety of filters can be used (col. 2, line 56 - col. 3, line 5), it contains no teaching as to using a filter without the broadband reflector. In fact, it highlights the opposite by stating that "prior art tunable filters have only a filter region, with no broadband reflective region" (col. 4, line 20-21). Every embodiment of shown in the Liou reference involves the use of the reflector material. In contrast, the claimed invention teaches a single filter material that achieves hitless tuning in one piece, without the need of a broadband reflector material. As such it does not have the boundary problem of Liou as mentioned above.

As Liou fails to teach the recited limitations of claim 1, a *prima facie* obviousness has not been established. Therefore, rejection on claim 1 based on 103(a) has been overcome. Claims 2-5, 7, 9-14 are thus allowable as they are now based on an allowable based claim.

CONCLUSION

The Examiner has rejected claims 1-14 and allowed claims 15-24. In reply, Applicant has amended the claims 1, 6, and 8 and replied to the 103(a) rejection on claims 1-5, 7, 9-14. Applicant asserts that the present application is in a condition for allowance.

Respectfully submitted,

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